



Patent  
Attorney's Docket No. 001560-504

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of	)	
Kenro YOSHINO et al.	)	Group Art Unit: Unassigned
Application No.: 10/519,706	)	Examiner: Unassigned
Filed: December 28, 2004	)	Confirmation No.: 3186
For: FLOW CONTROL VALVE (As amended)	)	

**PRELIMINARY AMENDMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Prior to examination of the above-identified application, kindly amend the application as follows:

DOCKETED *Al3*  
filed *7-28-05*

**AMENDMENTS TO THE SPECIFICATION**

*Please replace the title with the amended title:*

**"FLUID FLOW CONTROL VALVE"**

*Please replace the paragraph beginning at line 23 of page 5 and ending at line 29 of page 5 with the following amended paragraph:*

A first valve member includes: ~~a first joining portion of the piston arranged at the upper face center; a second joining portion penetrating the through hole of the spring receiving portion and joined and fixed~~ a second joining portion arranged in an upper face central portion, the second joining portion being joined and fixed to the first joining portion of the piston through the through-hole of the spring receiving portion; and a third joining portion arranged coaxially with the communicating hole of the main body at the lower face center.

### **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

#### **LISTING OF CLAIMS:**

1. (Currently Amended) A flow control valve comprising:

a main body (4) including a second cavity (8) provided in a lower central portion of the main body being open to a bottom portion, also including an inlet passage (9) communicated with the second cavity (8), also including a first cavity (10), the diameter of which is larger than that of the second cavity (8), an upper face of the first cavity (10) being open to the upper portion, also including an outlet passage (11) communicated with the first cavity (10), and also including a communicated hole (12), the diameter of which is smaller than that of the first cavity (10), the communicated hole (12) communicating the first cavity (10) with the second cavity (8), an upper face of the second cavity (8) composing a valve seat (13);

a bonnet (2) including a cylindrical cavity (16) communicated with a gas supply hole (14) and a gas discharge hole (15) and also including a step portion (17) arranged on a lower end circumferential face;

a spring receiving portion (3) inserted into the step portion (17) of the bonnet (2), having a through-hole (18) at the center;

a piston (4) including a first joining portion (23), the diameter of which is smaller than that of the through-hole (18) of the spring receiving portion (3), provided at a lower end portion, and also including a flange portion (24) provided in an upper

portion, the piston (4) being inserted into the cavity (16) of the bonnet (2) so that the piston (4) can be moved upward and downward;

a spring (24) interposed between a lower end face of the flange portion (21) of the piston (4) and an upper end face of the spring receiving portion (3);

a first diaphragm (27), the peripheral portion of which is interposed and fixed between the main body (1) and the spring receiving portion (3), the first diaphragm (27) covering the first cavity (10) of the main body (1), a central portion of the first diaphragm (27), which forms a first valve chamber (31), being formed thick;

a first valve member (5) including a second joining portion (29) arranged in an upper face central portion, the second joining portion (29) being joined and fixed to the first joining portion (23) of the piston (4) and through the through-hole (18) of the spring receiving portion (3), and also including a third joining portion (30) arranged in a lower face central portion coaxially with the communicated hole (12) of the main body (1);

a second valve member (6) including a valve element (32), the diameter of which is larger than that of the communicated hole (12) of the main body (1), located inside the second cavity (8) of the main body (1), also including a fourth joining portion (34) protruding from an upper end face of the valve element (32), joined and fixed to a third joining portion (30) of the first valve member (5), also including a rod (35) protruding from a lower end face of the valve element (32), and also including a second diaphragm (37) extending from a lower end face of the rod (35) in the radial direction; and

a base plate (7) located at a lower position of the main body (1) including a protruding portion (40) arranged at an upper central portion of the base plate (7), a peripheral edge portion of the second diaphragm (37) of the second valve member (6) being interposed and fixed between the main body (1) and the protruding portion (40), a recess portion (41) being provided in an upper end portion of the protruding portion (40), and also including a breathing hole (42) communicated with the recess portion (41), wherein

an opening area of the hydraulic control portion (39) composed of the valve element (32) of the second valve member (6) and the valve seat (43) of the main body (1) is changed according to an upward and downward motion of the piston (4).

2. (Currently Amended) A flow control valve according to claim 1, wherein the main body (1), the first valve member (5) and the second valve member (6) are made of polytetrafluoroethylene.

**REMARKS**

By way of the foregoing amendments, the specification has been amended to make minor editorial changes. The title has been amended to conform to the English language translation. Claim 1 has been amended to correct a typographical error without narrowing the claim scope. Finally, Claims 1 and 2 have been amended to remove the reference numerals. No new matter has been introduced by these changes.

It is requested that the application be examined on the basis of the specification, the title, and the claims as amended.

Early and favorable consideration with respect to this application is respectfully requested.

Should any questions arise in connection with this application, the undersigned respectfully requests that he be contacted at the number indicated below.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

Date: July 28, 2005

By: Matthew L. Schneider  
Matthew L. Schneider  
Registration No. 32,814

P.O. Box 1404  
Alexandria, Virginia 22313-1404  
(703) 836-6620

# Response to Missing Parts Postcard

36

Inventor: Kenro Yoshino et al.      Filing Date: December 28, 2004  
 Docket No.: 001560-504      Appln. No.: 10/519,706      Date: July 28, 2005  
 Dkt. Clerk Initials:      Working Atty.: Matthew L. Schneider / rsc

The following was/were received in the U.S. Patent and Trademark Office on the date stamped hereon:

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| <input checked="" type="checkbox"/> English Language Translation-Spec. 14pages<br>Claims 3 pages; Abstract; Figs. 1-5, 5 pages |   |

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